News Releases

R&D Chronicles: The Mosquito Fighters, Part XI: Malaria in the Dragon's Den, 1964-1975

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After dissection, a member of the Navy Preventive Medicine Unit G-18 views the salivary glands and gullet of the mosquito at 800 times normal size to determine if the malaria parasites are present, July 1969. BUMED Archives

"With the conduct of operations into the highlands and jungles where malaria control measures have been impossible due to Viet Cong control, the incidence of malaria has risen to the point where it is now a significant military as well as medical problem."

~Professional Knowledge Gained from Operational Experience in Vietnam, 1965-1966
(NAVMC 2614, 1967)

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Malaria proved to be a very serious challenge for military personnel in the Vietnam Conflict. From 1964 to 1975, there were 24,606 cases of malaria in the Navy and Marine Corps, amounting to over 391, 965 sick days lost. Only wounds and non-battle injuries amounted for more personnel days lost among combatants.

The *Plasmodium falciparum* form of malaria was especially pernicious. In 1968 alone, 75 percent of the malaria cases in theater were *P. Falciparum* infections—which unlike *P. vivax*—proved resistant to the standard Chloroquine-Primaquine (C-P) regimen.

In February 1968, after dealing with increased levels of malaria, the Commander, U.S. Military Assistance Command, Vietnam (MACV)—who oversaw Armed Forces in theater—authorized

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the administration of Dapsone tablets (*diaminodiphenyl sulfone*) in addition to the C-P regimen. An anti-inflammatory that historically had been used for everything from acne to leprosy, Dapsone was seen by some as a dubious prophylaxis.

To investigate the malaria problem, the Bureau of Medicine and Surgery (BUMED) sent a preventive medical specialist Capt. Charles Miller, MC, USN, to Vietnam in July 1969. Much of his work would be conducted in concert the Navy Preventive Medicine Unit (PMU) G-18/19 based in Da Nang. Established July 7, 1965, the PMU would execute sanitation and vector control practices, conduct malaria surveys, oversee field surveillance, and collect larvae throughout the tactical zone. Of the 75 species of mosquito collected, PMU personnel identified two subspecies of *Culex* (*Lophoceraomyia* and *Mochthogenes*) never before identified in Vietnam.

Aerial insecticides would prove a key component of the Navy's vector control effort in theater. In 1967, the Navy Disease Vector Ecology and Control Center (DVECC) in Jacksonville, Florida, developed the Helicopter Improved Aerial Insecticide Dispersal Apparatus prototype as an alternative to liquid droplet (Fog) dispensers. Designed to spread granular insecticides that could penetrate through dense jungle areas, the device consisted of a receptacle placed at the nose of a helicopter from which the insecticide was propelled by a stream of forced air. It would be used extensively in theater and serve as the basis for apparatuses later used by the Army and civilian organizations.

From 1965 to 1970, the coastal city of Da Nang would serve as a base of operations for the PMU, a naval station hospital and beginning in February 1967, a Naval Medical Research Unit (NAMRU) Detachment. During its brief existence, the NAMRU-2 Detachment Da Nang directed extensive research efforts on Vietnam fevers of unknown origin (FUO). Of the 650 FUO patient samples received from February to September 1967 alone, NAMRU personnel identified previously undiagnosed cases of mosquito-borne arbovirus, meningoencephalitis and malaria.

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